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U.S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
PICATINNY ARSENAL, NJ 07806-5000



AD-A270 440



REPLY TO
ATTENTION OF

SMCAR-AEP (1mm)

MEMORANDUM FOR Commander, Defense Technical Information Center,
Building 5, Cameron Station, Alexandria, VA,
22304-6145

SUBJECT: Release of Performance Oriented Packaging Compliance
Reports

1. The enclosed report (DOD POP HMTR/AYD 93-016) entitled:
"Performance Oriented Packaging (POP) Testing of Artillery Type and
Rocket Fuzes Packed in a Wood Wirebound Box" is hereby submitted to
the Defense Technical Information Center for formal release. Please
send notification of formal release to:

U.S. Army Armament Research, Development and Engineering Center
Picatinny Arsenal, NJ 07806-5000

2. If there are any problems, questions, or comments regarding
these reports, contact Mr. Raymond Siroy at 201-724-2181 (DSN
880-2181).

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OCT 07 1993
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ROBERT J. KUPER
Chief, Packaging Division

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for public release and sale; its
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93-23507



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I. Report Number: DOD POP HM TR/AYD 93-016

II. Title: Performance Oriented Packaging (POP) testing of Artillery
Type and Rocket Fuzes Packed in a Wood Wirebound Box

Drawing Number: 8861213

Author: Raymond J. Siroy

Performing Activity: U.S. Army Armament Research, Development
and Engineering Center (ARDEC)

Address: Department of the Army
Commander, U.S. Army ARDEC
Attn: SMCAR-AEP
Picatinny Arsenal, N.J. 07806-5000

Date: August 1993

Distribution Statement A.

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DTIC (DAAG) 8861213

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			2. Ammunition Packaging		
			3. M2A1 Container		
			4. Wirebound Box		
			5. Packaging		
19 ABSTRACT (Continue on reverse if necessary and identify by block number) This Performance Oriented Packaging (POP) report is for the Army Artillery Type and Rocket Fuzes Packed in accordance with drawing 8861213. The exterior wirebound box, 12960853, contains two M2A1 metal inner containers, 7553296, containing various types of artillery and rocket fuzes with different weights. This report describes the results of testing conducted on a similar packaging which is used as an analogy for these items.					
20 DISTRIBUTION AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS			21 ABSTRACT SECURITY CLASSIFICATION Unclassified		
22a NAME OF RESPONSIBLE INDIVIDUAL STEVE RUFFINI <i>Steve Ruffini</i>			22b TELEPHONE (Include Area Code) (201) 724-2515		22c OFFICE SYMBOL SMCAR-AEP

1. DATA SHEET

a. CONTAINER (Outer):

Type: Box, Wirebound

UN Code: 4C1

Part Number: 12960853

Spec Number: MIL-B-46506

Material: Wood and Wire

Capacity: 18.3 liters

Dimensions* :

Inside: 31.11 cm x 30.64 cm x 19.21 cm
(12 1/4 in x 12 1/16 in x 7 9/16 in)

Outside: 37.14 cm x 32.54 cm x 21.75 cm
(14 5/8 in x 12 13/16 in x 8 9/16 in)

* Note:

Dimensions of the wood wirebound box used by analogy is slightly different from the actual tested box due to different wood wirebound box specifications. PPP-B-586 is used for the tested box and MIL-B-46506 is used for the analogy box. Both specifications are used to packaged the same M2A1 metal containers.

Closure (Method/Type) Wire and Loop

Tare Weight: 2.5 kg (5.5 lbs)

b. CONTAINER (Inner):

Type: Box

Model Number: M2A1

Drawing Number: 7553296

Spec Number: MIL-B-3060

Material: Metal

Capacity: 6.8 liters

Dimensions:

Inside: 27.94 cm x 14.13 cm x 17.22 cm
(11 in x 5 9/16 in x 6 25/32 in)

Outside: 30.56 cm x 15.48 cm x 19.05 cm
(12 1/32 in x 6 3/32 in x 7 1/2 in)

Weight: 2.5 kg (5.5 lbs)

Closure (Method/Type): Hinged Lid

c. PRODUCT(S): See Attachment No. 1

2. BACKGROUND, TESTS, AND RESULTS

The Department of Transportation (DOT) per Codes of Federal Regulation (CFR), Title 49, Parts 100-179, dated 1 Oct 92, requires that Hazardous Materials should be packed in a container that passes the Performance Oriented Packaging (POP) tests.

The Wood Wirebound Box reference 1a, is used as the shipping container for Army Artillery Type and Rocket Fuzes packed in accordance with drawing 8861213.

Reference the following documents:

- a. Code of Federal Regulations, Title 49, Dated Oct. 1 1992.
- b. POP Report DOD POP HMTR/AYD 92-005

Instead of testing the specific container used for the Army Artillery Type and Rocket Fuzes in accordance with drawing 8861213, the box is certified to meet the requirements of the Code of Federal Regulations (CFR), Title 49, based on a previously tested box which has the following weight and dimensions:

Gross Weight: 154 lbs (70 kg)
Dimensions:

Inside: 30.95 cm x 30.63 cm x 19.20 cm
(12 3/16 in x 12 1/16 in x 7 9/16 in)

Outside: 36.67 cm x 31.83 cm x 20.64 cm
(14 7/16 in x 12 17/32 in x 8 1/8 in)

Stacking Test, Loose Cargo Test and Four Foot Drops were conducted in accordance with Reference 2b. The results indicated no leakage or spillage of contents from the wirebound boxes following any of the tests, thus satisfying the requirements of the 49 CFR. This falls within the guidelines for analogy IAW Variation III of Para. 178.601(g)(3) of Reference 2a.

3. Based upon the above POP testing, the following POP symbol has been applied to the wirebound box in accordance with drawing 8861213.

u n	4C1/Y32/S/** USA/DOD/AYD
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** Last two digits of year packed.

Attachment No. 1

DOD POP HMTR/AYD 93-016
Sheet 1 of 10

c. PRODUCT(S):

1. Name: Fuze PD M48A3
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0257
NSN: 1390-00-935-1952
Drawing Number: 8798219
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
2. Name: Fuze PD M51A5
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0106
NSN: 1390-00-028-4901
Drawing Number: 9217945
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
3. Name: Fuze PD M51A5
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0107
NSN: 1390-00-892-4153
Drawing Number: 9217945
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
4. Name: Fuze PD M78A1
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0107
NSN: 1390-00-676-7837
Drawing Number: 73-2-214
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
5. Name: Fuze PD M78A1
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0106
NSN: 1390-00-926-3932
Drawing Number: 73-2-214
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8

Attachment No. 1

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PRODUCT(S) CON'T:

6. Name: Fuze Rocket M81A1
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0409
NSN: 1340-00-028-106
Drawing Number: 73-2-251
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
7. Name: Fuze Rocket M423
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0257
NSN: 1340-00-764-3640
Drawing Number: 8883683
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
8. Name: Fuze Rocket M427
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1340-00-769-5304
Drawing Number: 8883745
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
9. Name: Fuze Rocket M429
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0257
NSN: 1340-00-926-9301
Drawing Number: 11705900
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
10. Name: Fuze PD M519
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0106
NSN: 1390-00-978-7764
Drawing Number: 73-2-393
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8

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PRODUCT(S) CON'T:

11. Name: Fuze MTSQ M520A1
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0106
NSN: 1390-00-060-1928
Drawing Number: 8594044
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
12. Name: Fuze PD M524E2
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-00-957-5719
Drawing Number: 9205729
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
13. Name: Fuze PD M524A5
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-00-965-0570
Drawing Number: 9205729
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
14. Name: Fuze PD M524A6
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-00-143-7008
Drawing Number: 9205729
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
15. Name: Fuze PD M526
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-00-071-2482
Drawing Number: 8800254
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8

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PRODUCT(S) CON'T:

16. Name: Fuze PD M526
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-00-877-6968
Drawing Number: 8800254
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
17. Name: Fuze Proximity M532
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0106
NSN: 1390-00-764-9124
Drawing Number: 11001028
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
18. Name: Fuze PD M535
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0106
NSN: 1390-00-814-0266
Drawing Number: 8866760
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
19. Name: Fuze MTSQ M548
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0257
NSN: 1390-00-814-3422
Drawing Number: 8596001
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
20. Name: Fuze MTSQ M548
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0257
NSN: 1390-00-892-4193
Drawing Number: 8596001
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8

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PRODUCT(S) CON'T:

21. Name: Fuze PD M557
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0106
NSN: 1390-00-187-5392
Drawing Number: 8863535
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
22. Name: Fuze PD M557
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0106
NSN: 1390-00-892-4302
Drawing Number: 8863535
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
23. Name: Fuze PD M557
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0257
NSN: 1390-01-080-4171
Drawing Number: 8863535
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
24. Name: Fuze MTSQ M564
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-00-889-2044
Drawing Number: 10534285
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
25. Name: Fuze MTSQ M564
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-01-032-6130
Drawing Number: 10534285
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8

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PRODUCT(S) CON'T:

26. Name: Fuze MTSQ M564
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0409
NSN: 1390-01-046-6802
Drawing Number: 10534285
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
27. Name: Fuze MT M565
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0257
NSN: 1390-00-993-5691
Drawing Number: 10522991
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
28. Name: Fuze PD M567
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0409
NSN: 1390-01-348-0214
Drawing Number: 9246242
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
29. Name: Fuze PD M572
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-00-009-5572
Drawing Number: 8880696
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
30. Name: Fuze PD M572
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-00-892-4898
Drawing Number: 8880696
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8

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PRODUCT(S) CON'T:

31. Name: Fuze MTSQ M577
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0410
NSN: 1390-00-805-0692
Drawing Number: 9236500
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
32. Name: Fuze MTSQ M577A1
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0410
NSN: 1390-01-158-8194
Drawing Number: 9352381
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
33. Name: Fuze MTSQ M577A1
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0410
NSN: 1390-01-247-4013
Drawing Number: 12554574
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
34. Name: Fuze MTSQ M582
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-00-169-5864
Drawing Number: 9236701
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
35. Name: Fuze MTSQ M582
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0410
NSN: 1390-01-159-8044
Drawing Number: 9236701
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8

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PRODUCT(S) CON'T:

36. Name: Fuze MTSQ M582A1
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-01-158-8193
Drawing Number: 9352383
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
37. Name: Fuze MTSQ M582A1
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0410
NSN: 1390-01-247-4012
Drawing Number: 9352383
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
38. Name: Fuze MT M592E1
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0367
NSN: 1390-00-425-6265
Drawing Number: 10542850
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
39. Name: Fuze ET M724
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0409
NSN: 1390-01-068-3936
Drawing Number: 11711268
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
40. Name: Fuze Proximity M732
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0409
NSN: 1390-01-020-0096
Drawing Number: 11716451
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8

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PRODUCT(S) CON'T:

41. Name: Fuze Proximity M732
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0409
NSN: 1390-01-137-5444
Drawing Number: 11716451
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
42. Name: Fuze Proximity M732
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0409
NSN: 1390-01-202-1710
Drawing Number: 11716451
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
43. Name: Fuze Proximity M732A2
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-01-309-6452
Drawing Number: 11742780
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
44. Name: Fuze PD M739
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-00-574-7705
Drawing Number: 9258605
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
45. Name: Fuze PD M739
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0409
NSN: 1390-01-080-9447
Drawing Number: 9331995
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8

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PRODUCT(S) CON'T:

46. Name: Fuze PD M739A1
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0409
NSN: 1390-01-132-7481
Drawing Number: 9345332
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
47. Name: Fuze ET M762
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0367
NSN: 1390-01-282-6038
Drawing Number: 12551000
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
48. Name: Fuze ET M767
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0408
NSN: 1390-01-283-6532
Drawing Number: 12550850
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8
49. Name: Fuze ET M767
United Nations Proper Shipping Name: Fuzes, Detonating
United Nations Number: 0367
NSN: 1390-01-341-8659
Drawing Number: 12934965
Physical State: Solid
United Nations Packing Group: II
Amount Per Container: 8